Pract. Periodical on Struct. Des. and Constr. / Volume 9 / Issue 4 / ARTICLES

Project-Specific Steel Sheet Piling Applications

Pract. Periodical on Struct. Des. and Constr. Volume 9, Issue 4, pp. 194-201 (November 2004)
Issue Date: November 2004

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Hot-rolled, heavy-gauge steel sheet piling has advantages over other available products including concrete, vinyl, and fiberglass-reinforced polymers for bulkhead and deep-excavation applications. For FEMA seawall bulkheads, steel sheet piling provides the only practical structural solution available. For deep excavations, steel sheet piling typically provides the most economical solution for the conditions encountered in braced trench and cofferdam construction. A steel sheet pile wall consists of a continuous row of interlocking vertical segments that form essentially a straight wall that is capable of acting integrally. There are two primary types of steel sheet pile wall structures: cantilevered and anchored. Walers are commonly used in conjunction with tiebacks to construct anchored sheet pile walls. Tiebacks are typically installed as either ground anchors or anchor rods secured to deadmen. Cofferdams are a special form of steel sheet pile construction in which the method of resistance to soil forces is provided through the ability of the circular footprint to function either as a compression or tension ring. The design of sheet pile walls involves the evaluation of loads imposed by soil, water, surcharging, and other externally applied forces. The analysis of a sheet pile wall includes a determination of the required depth of embedment, sizing of any anchorage systems, and verification that the actual flexural stresses do not exceed the allowable. Safety factors are typically included in the determination of the minimum embedment depth.

History: Submitted 12 May 2003; accepted 10 November 2003
Permalink: http://dx.doi.org/10.1061/(ASCE)1084-0680(2004)9:4(194)

PUBLICATION DATA
ISSN:
1943-5576 (online) 1084-0680 (print)
Publisher: